How to Make Boxes Using a Lock Miter Router Bit

Video By: Dale C. Maley, Fairbury, Illinois, March 2024

How to Make Boxes Using a Lock Miter Router Bit

- Have almost 50 years of woodworking experience

- Have made lots of boxes
  - -Butt Joints
  - -Kreg Pocket Screws
  - -Mortise and tenon
  - -Finger joints
  - -45 miters glued up

How About Lock Miter Joints?

How to Make Boxes Using a Lock Miter Router Bit

- Many companies sell the router bits
- I have been using MLCS for many years
- Bought bit from MLCS
- Set-up guide sold out and on back-order

How to Make Boxes Using a Lock Miter Router Bit

MLCS

Product Options

Stock Size	(D) Large Dia.	(L) Cutting Length	Overall Length	Shank Size	Setup Block #	Item #	Price	Qty
3/8" to 1/2"	1-3/8"	-	-	1/4"	9750	**5547**	$35.50	0
1/2" to 3/4"	2"	7/8"	2-1/8"	1/4"	9751	**5548**	$37.50	0
3/8" to 1/2"	1-1/2"	9/16"	2"	1/2"	9750	**7847**	$36.50	0
1/2" to 3/4"	2"	7/8"	2-1/8"	1/2"	9751	**7849**	$41.95	0
1/2" to 1-1/8"	2-3/4"	1-1/8"	3"	1/2"	9753	**7850**	$47.50	0

Ability to make boxes from ½” or ¾” thick stock is ok.

Pricing as of March 2024.

How to Make Boxes Using a Lock Miter Router Bit

- My old Sears low-cost router table can only hold about 1-3/4” max bit OD

- This bit is 2”, won’t fit my table.

How to Make Boxes Using a Lock Miter Router Bit

- Have made spacer fences before, but spacer width of 3.5” is not wide enough, board wants to tip

- Can I make a wider fence??

How to Make Boxes Using a Lock Miter Router Bit

- Made new fence/spacer from ½” MDF

- Top piece of 1 by 4 is screwed to MDF Horiz. piece

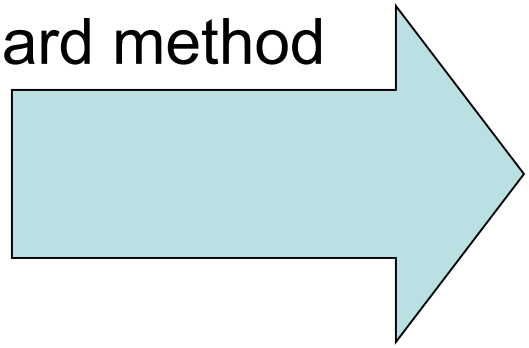
How to Make Boxes Using a Lock Miter Router Bit

- MLCS have instructional video and PDF file
  - -video uses nylon set up block
  - -on Youtube at……

https://www.youtube.com/watch?v=POvBhQo2ivQ

-PDF instructions are at https://tinyurl.com/3a8dv2ea

- Video not much help if no set-up block ☹
- But other YouTube video guy talks about how to set up with no set-up block……using centerline on board method



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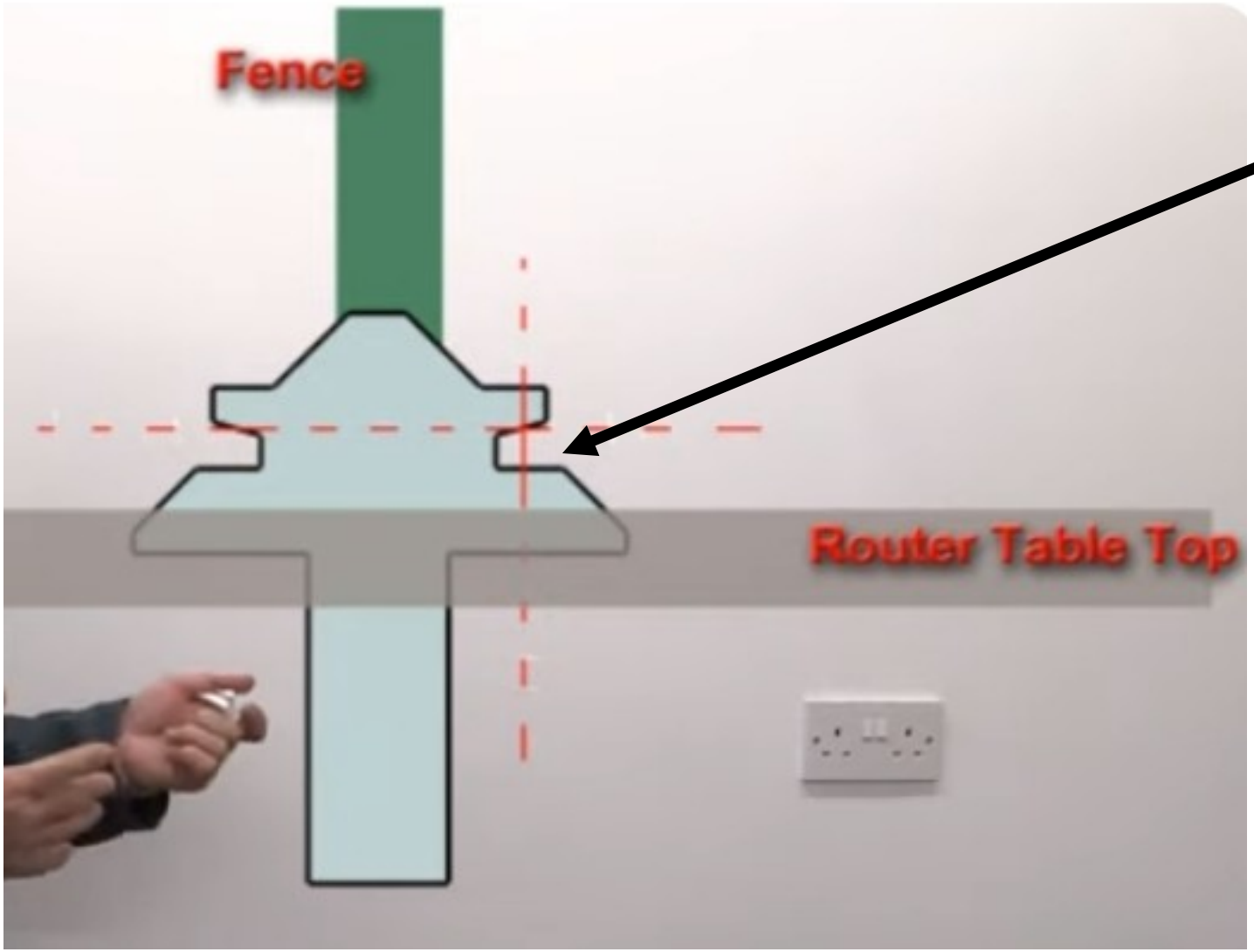

Center Point in X & Y

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1. I marked the center of the ¾” thick pine board

2. I lined up the bit height, and then the fence depth using the centerline mark on the board, versus the little angle on the bit.

3. I did the 2 long edges of a piece of 1 by 4 scrap, took 2 passes, was afraid 1 pass was too much?

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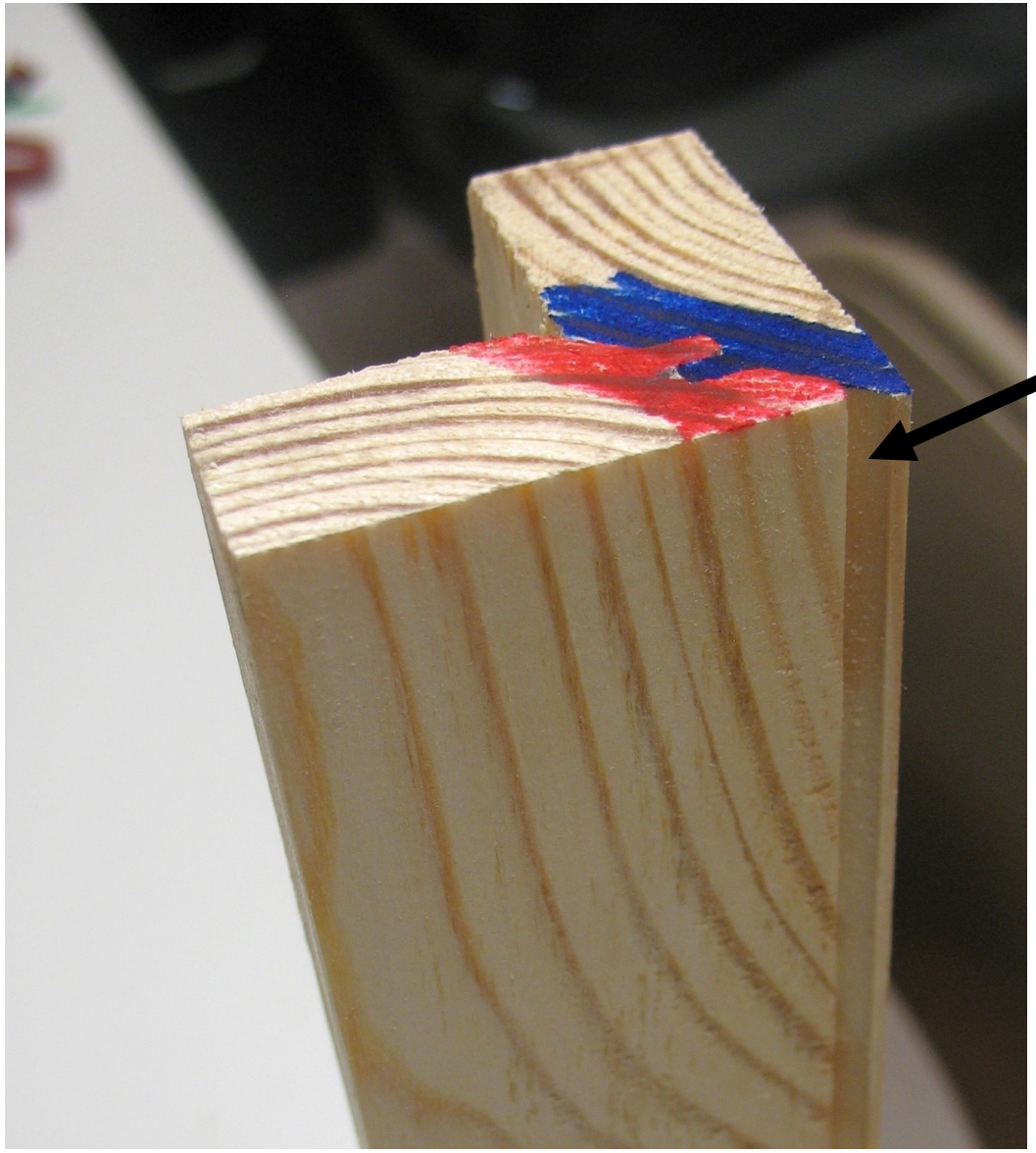

2 corner edges
do not meet,
about 1/8” off

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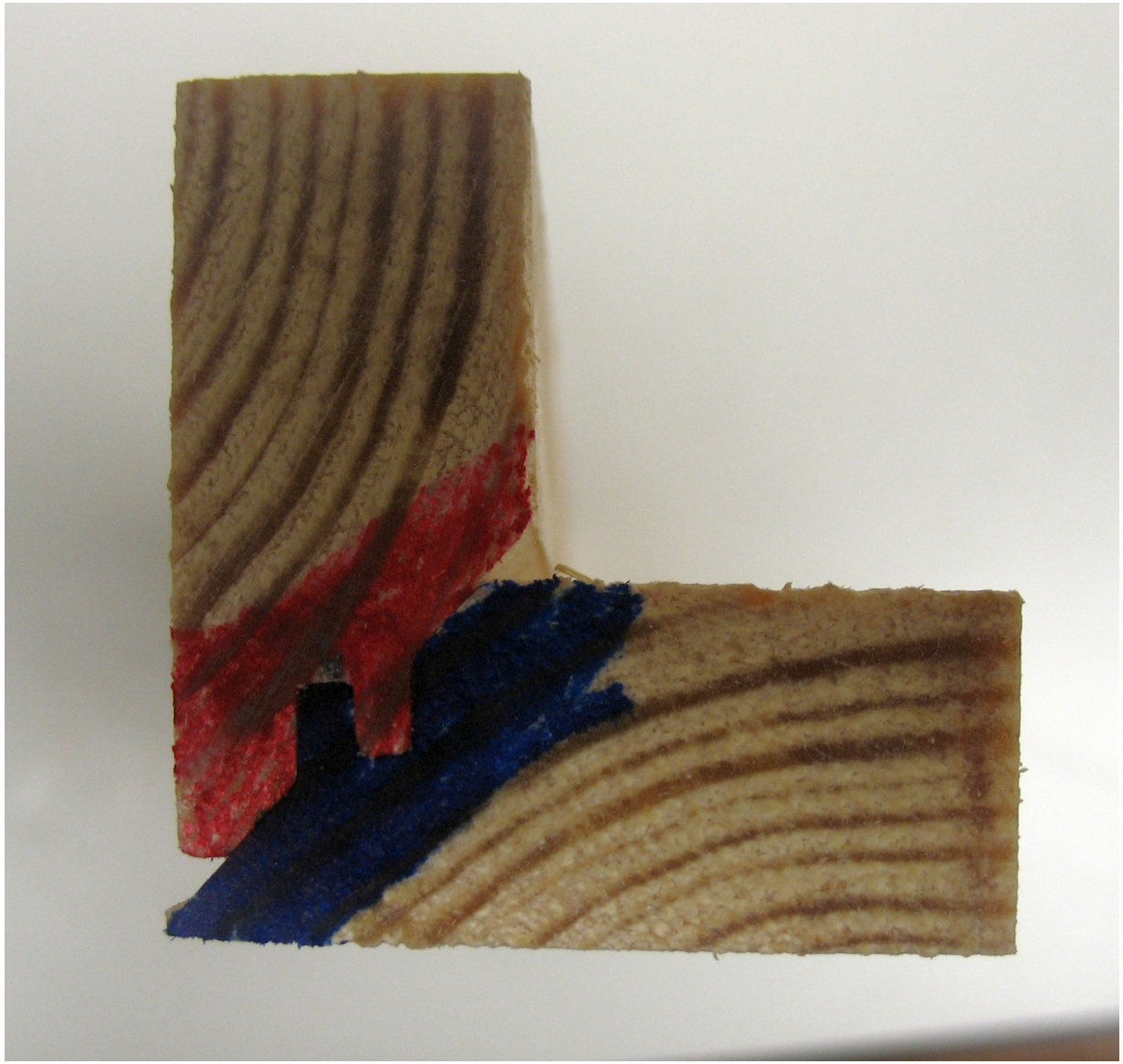

In the ballpark for the 1st attempt. Now try to adjust bit height and fence depth.

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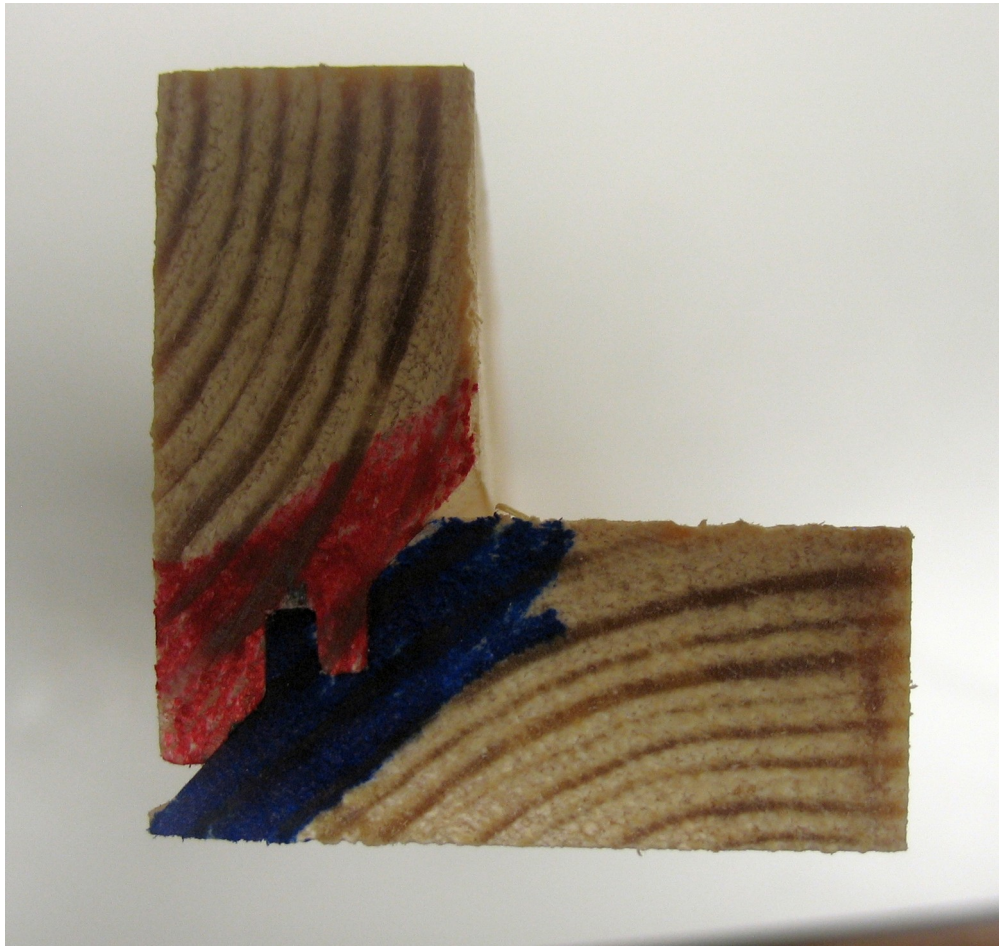
- Studied pieces, I am exactly on the right place with the centerline of the wood compared to the point the guy said?



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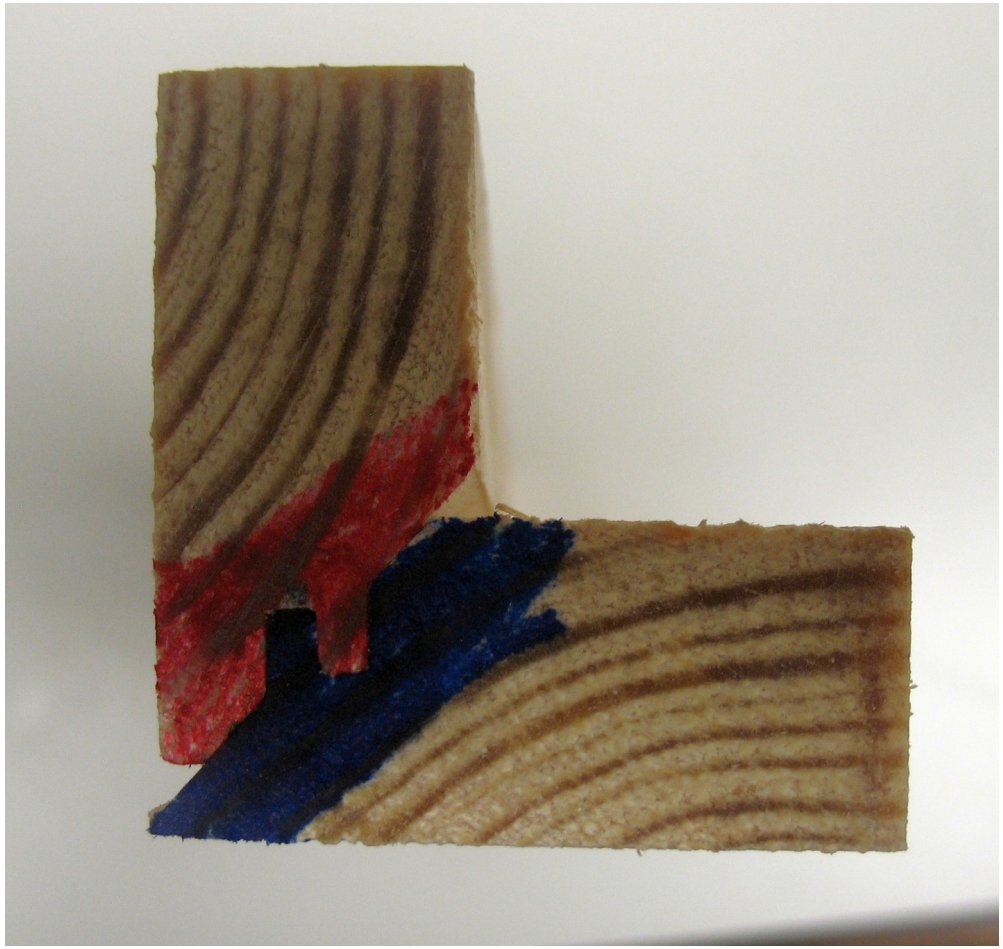
- My bit and the bit in the other video are slightly different, maybe the center point should be different?



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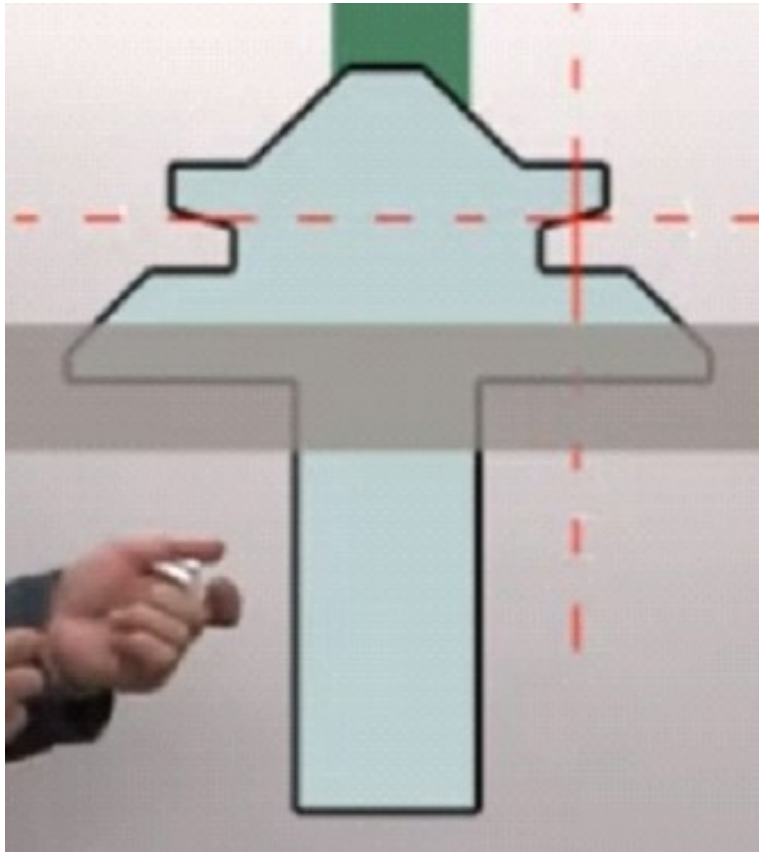

Well, they are fairly similar.

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- I tried laying out in Sketchup to confirm the center point, but that did not work too well.

- Lowered bit maybe 1/16 to an 1/8, tried that for Attempt #2 -did not help

- Lowered it again for Attempt #3, made worse

- I was able to cut the joint in 1 pass, in pine, going slow.

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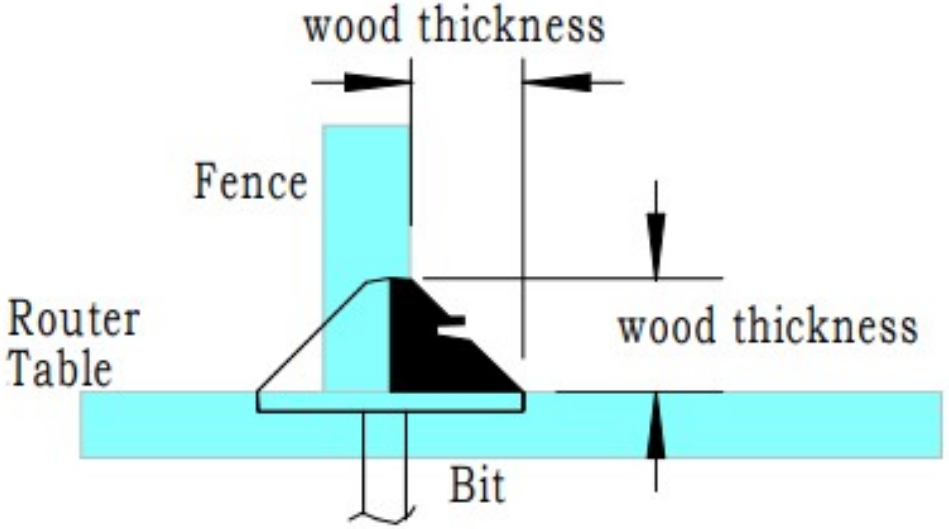
Lowered bit about 1/8” each time

How to Make Boxes Using a Lock Miter Router Bit

- From MLCS PDF instructions

-Says to align the bit to the wood like this diagram

- Maybe I will try that.



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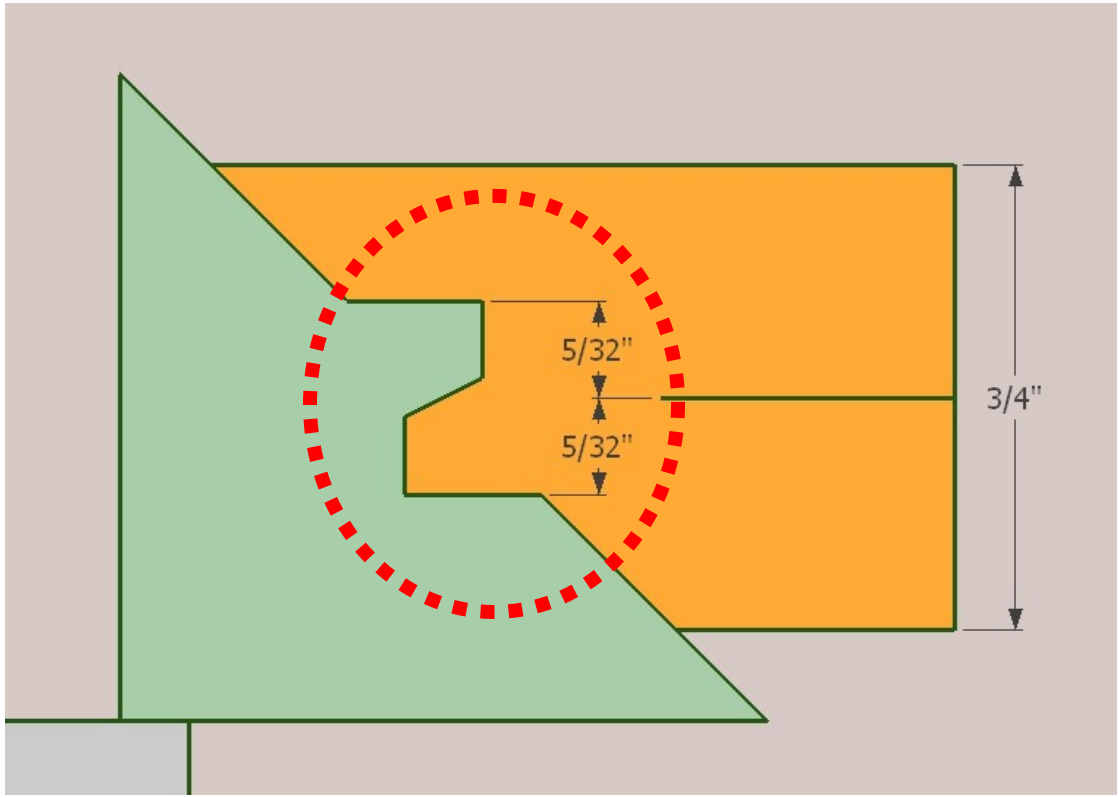
- If I had to design this bit, I want the non-45 degree features to be centered on the ¾” thick board

- Which is the MLCS instructions sort of say



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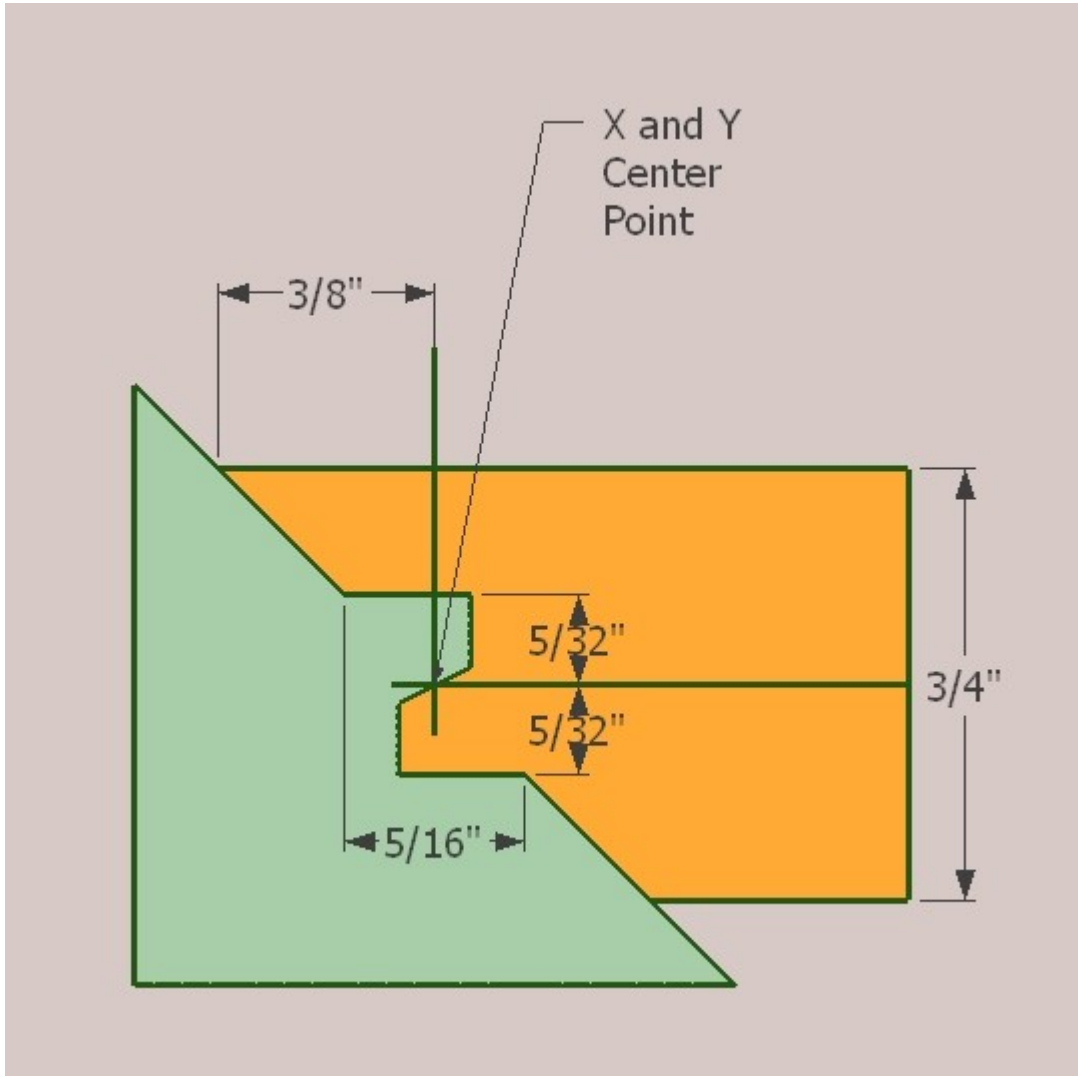
- On my design, the X & Y center point comes out as shown

- Do 2 boards fit ok with this design in theory?



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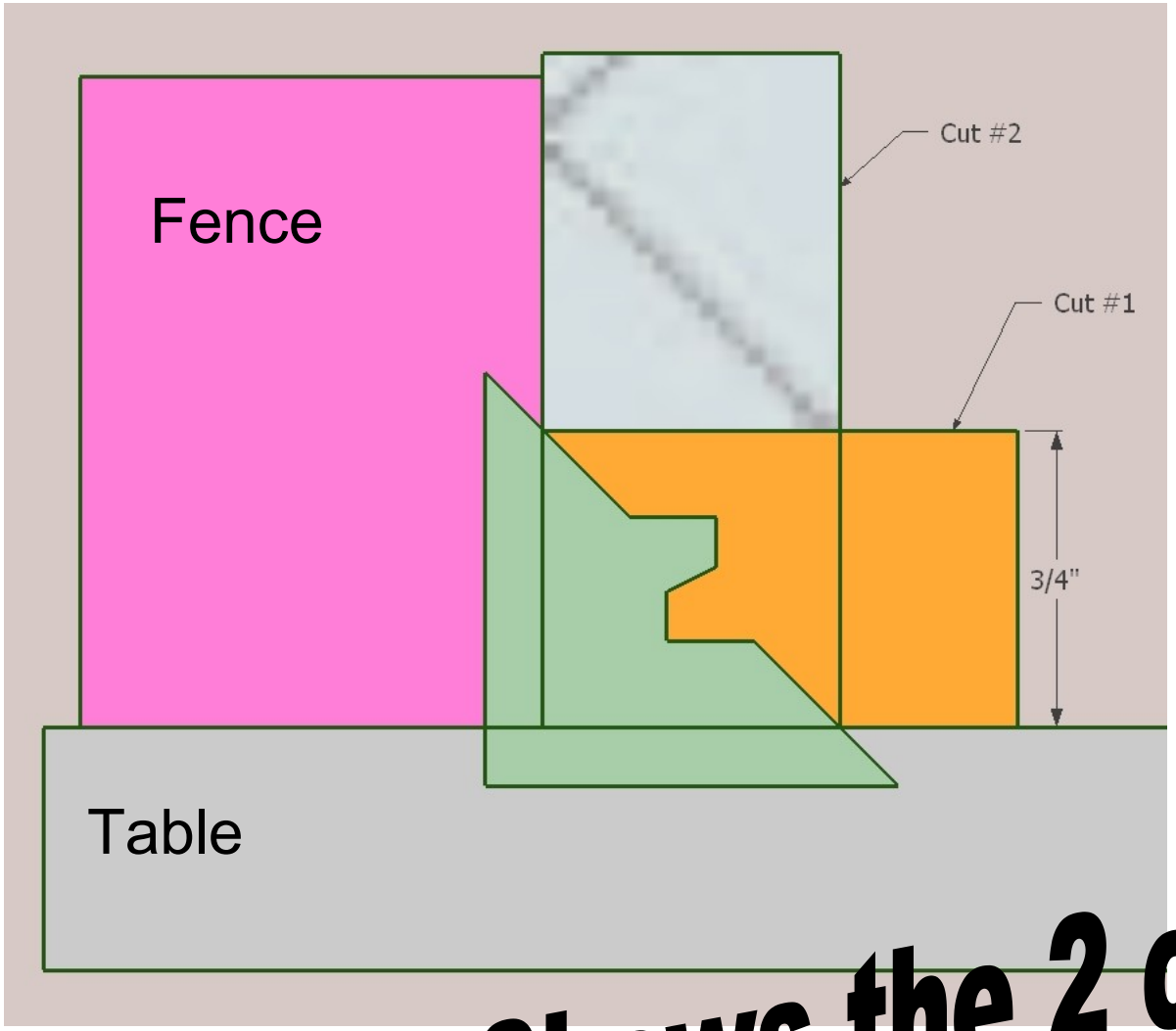

Shows the 2 cuts

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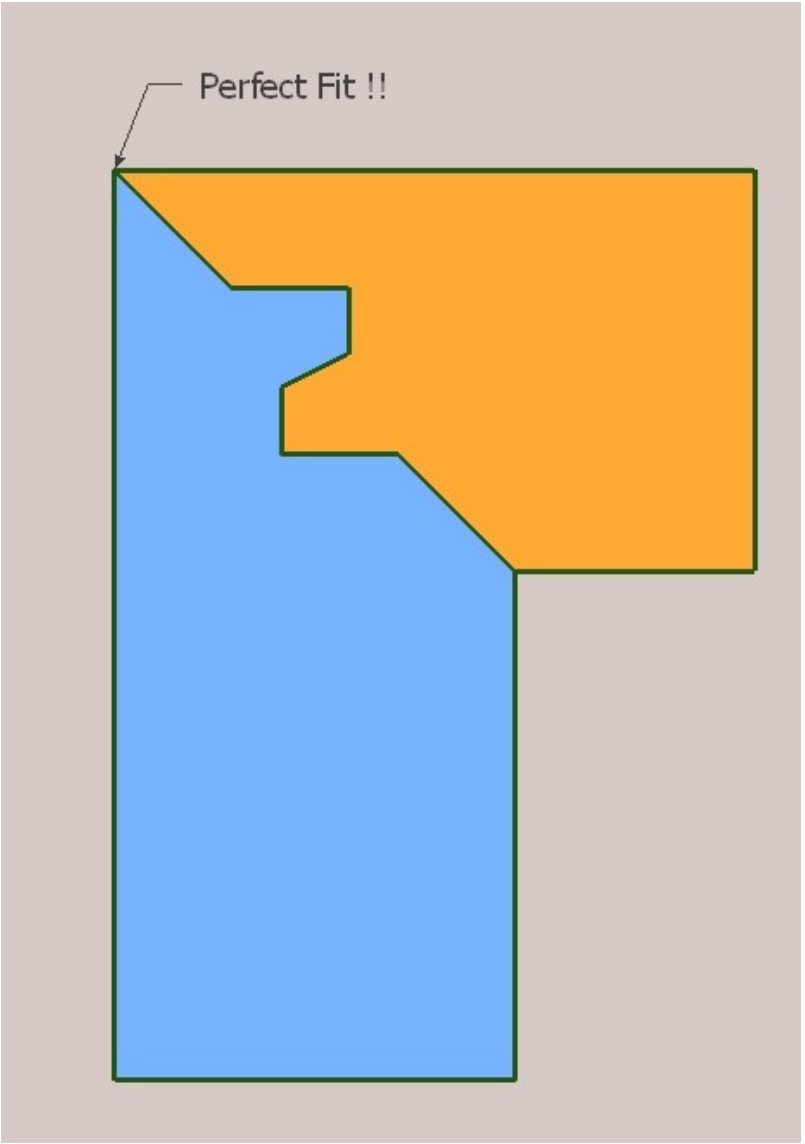
- Got a perfect fit in Sketchup !!



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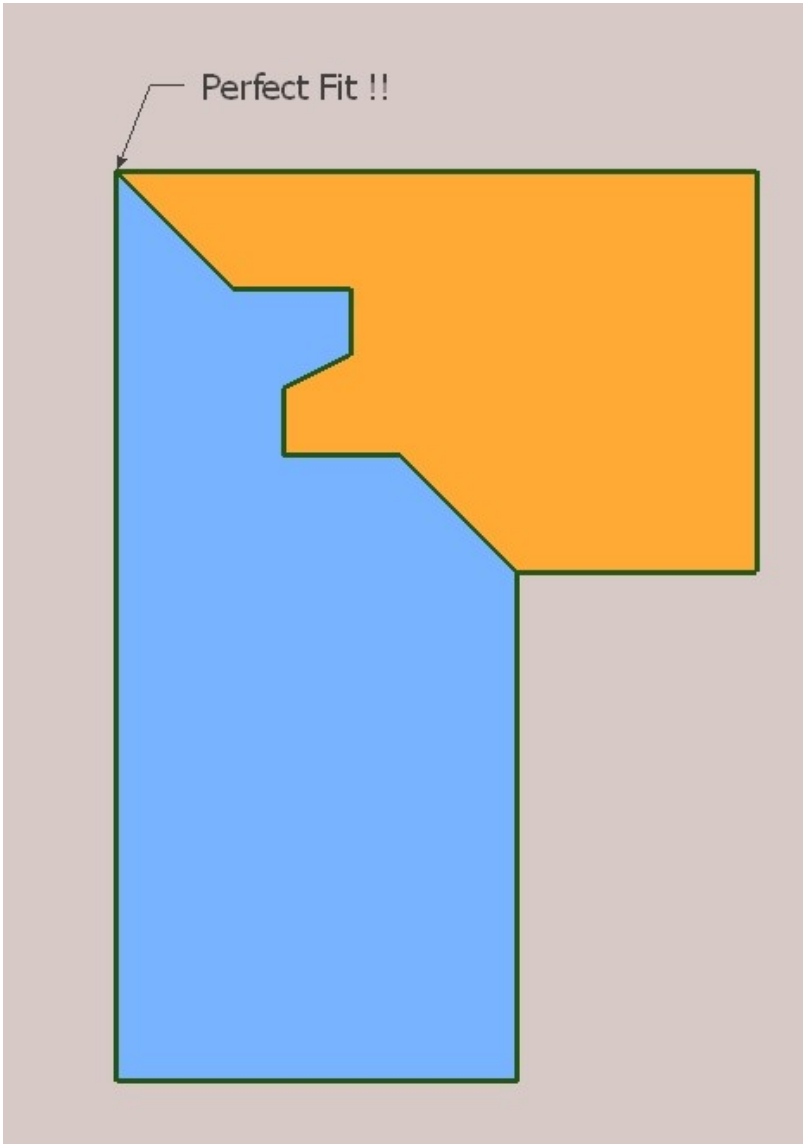
- So in Theory, I could make a troubleshooting chart telling you how to adjust the bit depth and fence depth based upon the resultant geometry.



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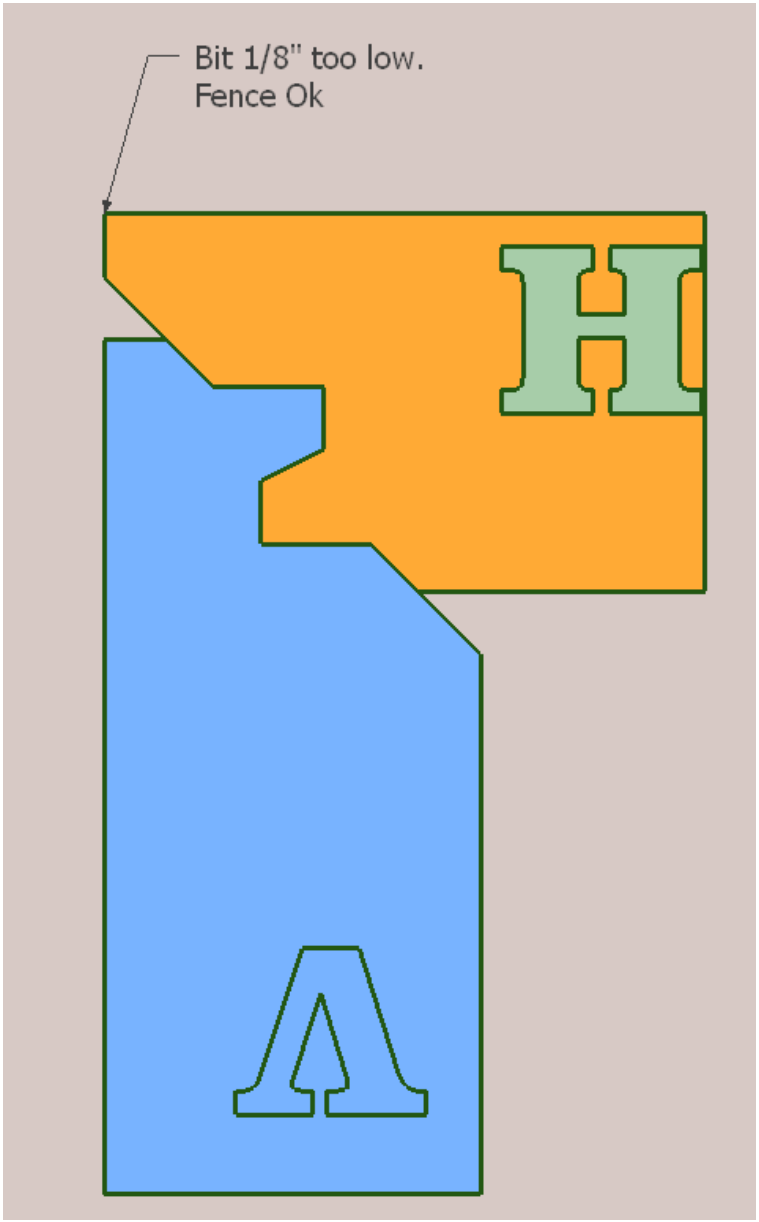

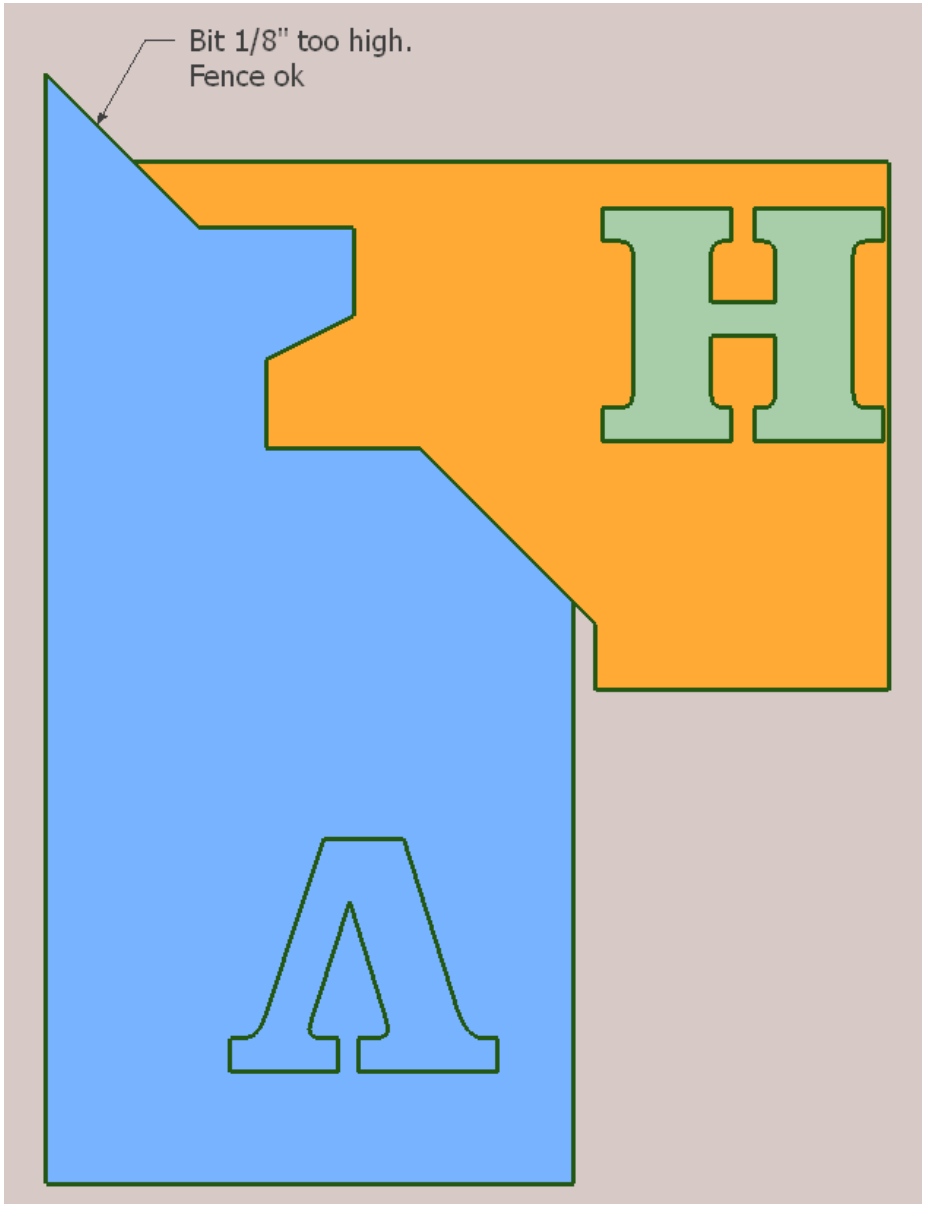

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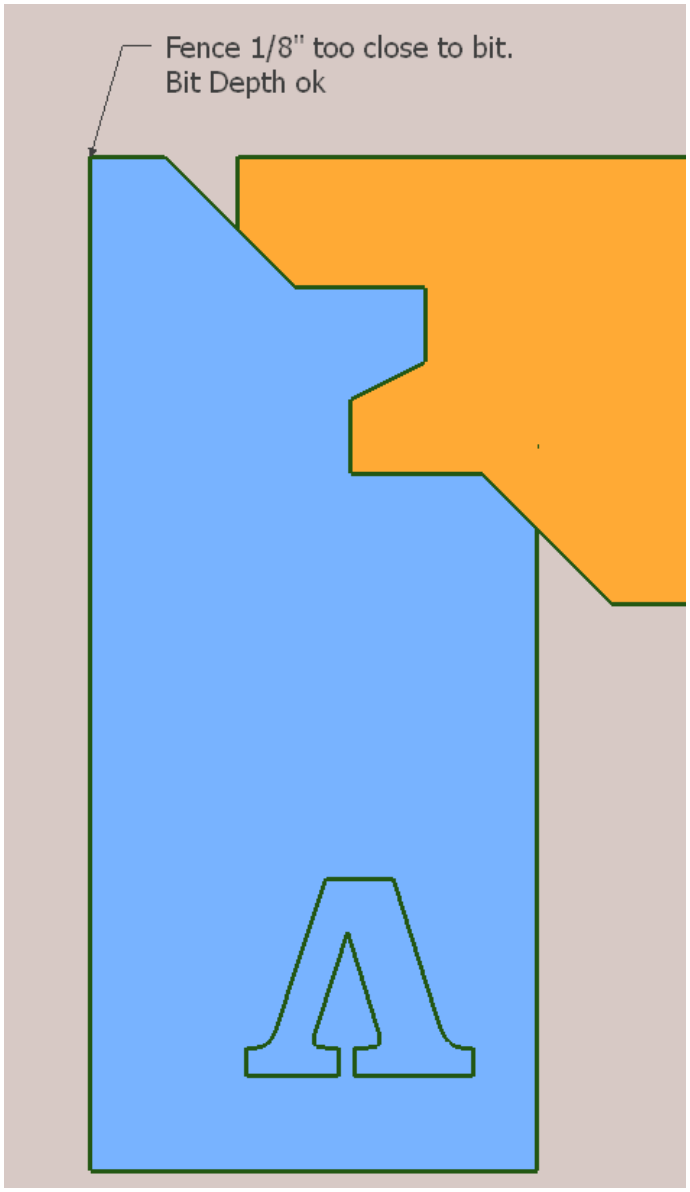
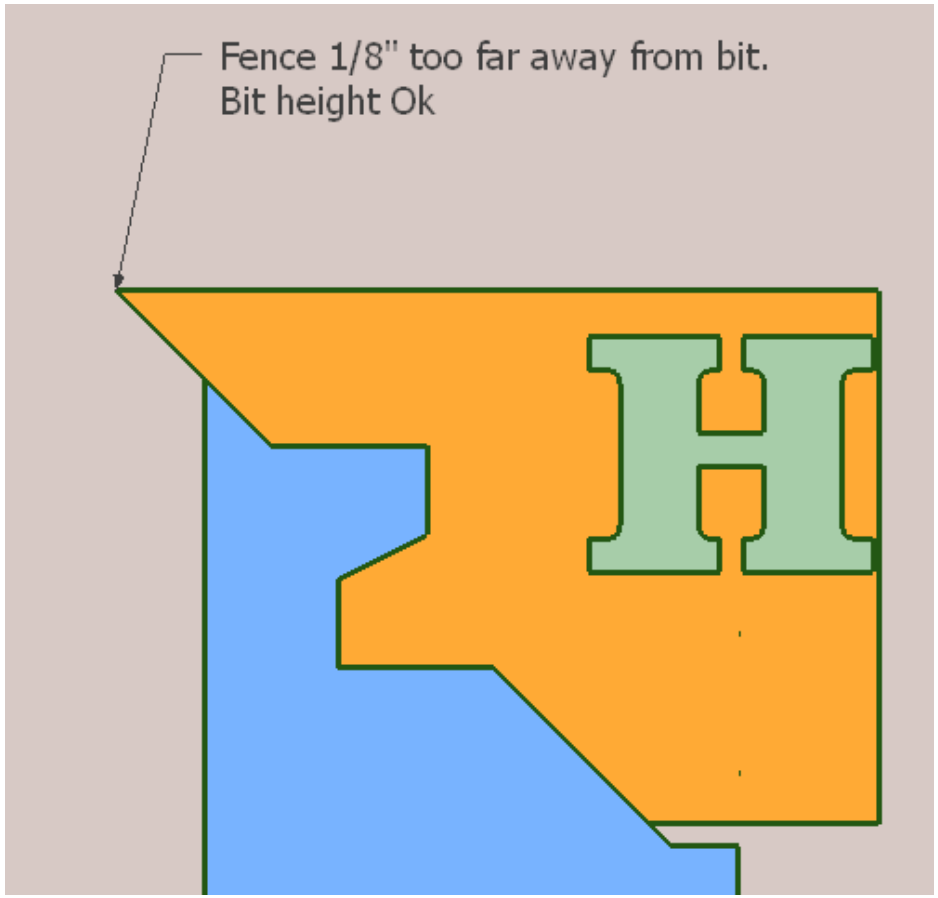




I will try using these charts to help me speed up the set-up.

How to Make Boxes Using a Lock Miter Router Bit

- Added 2-Clamps at full depth of fence.

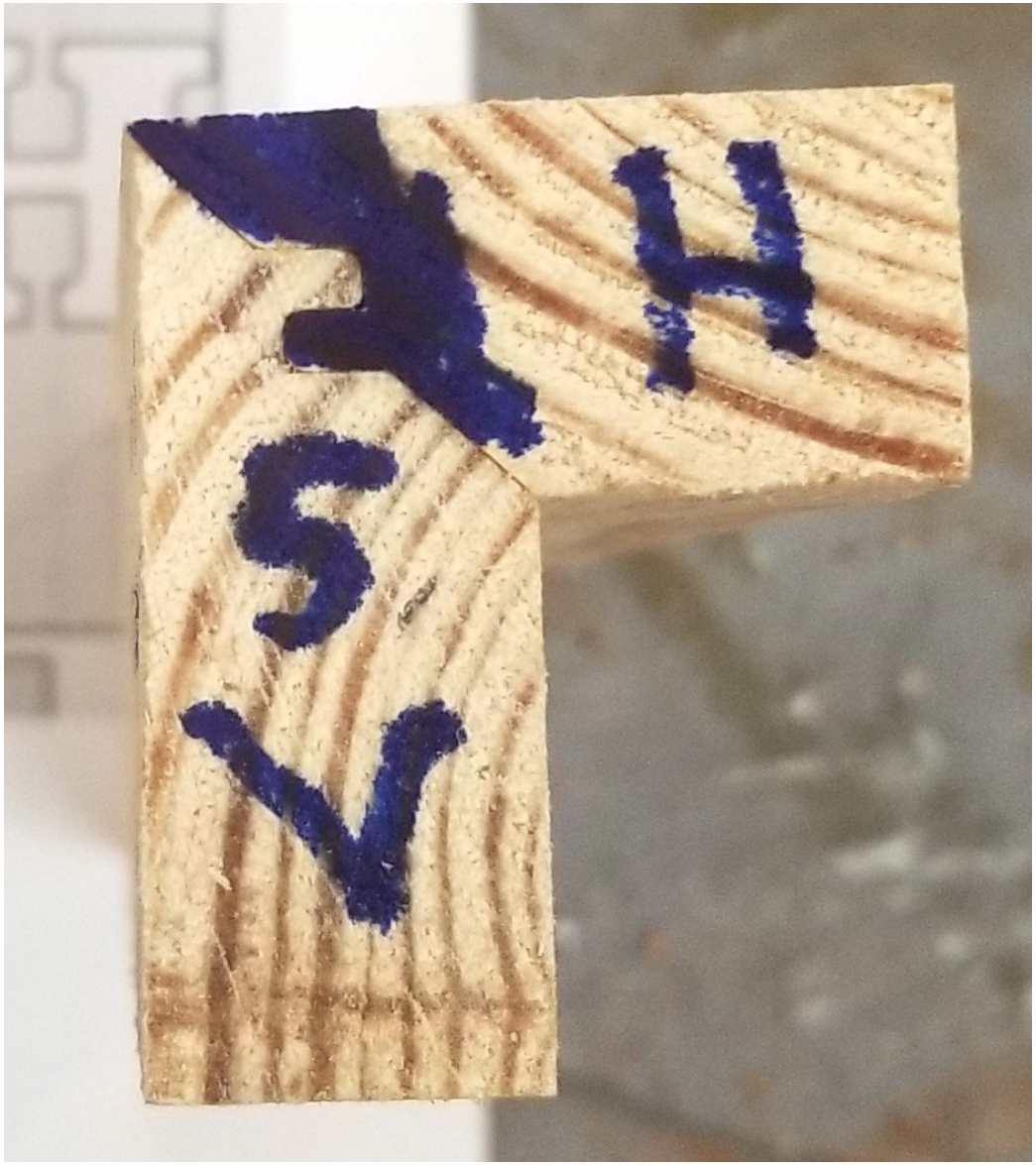
- Allows you to make multiple passes with fence ending up at the right spot.

- With shorter test pieces, had some tipping when re-entered fence after hole, need to add 2-sided taped longer guides like MLCS video suggest.

How to Make Boxes Using a Lock Miter Router Bit

- Hard to see in photo, but my troubleshooting guide says fence too far away from bit by a small amount.

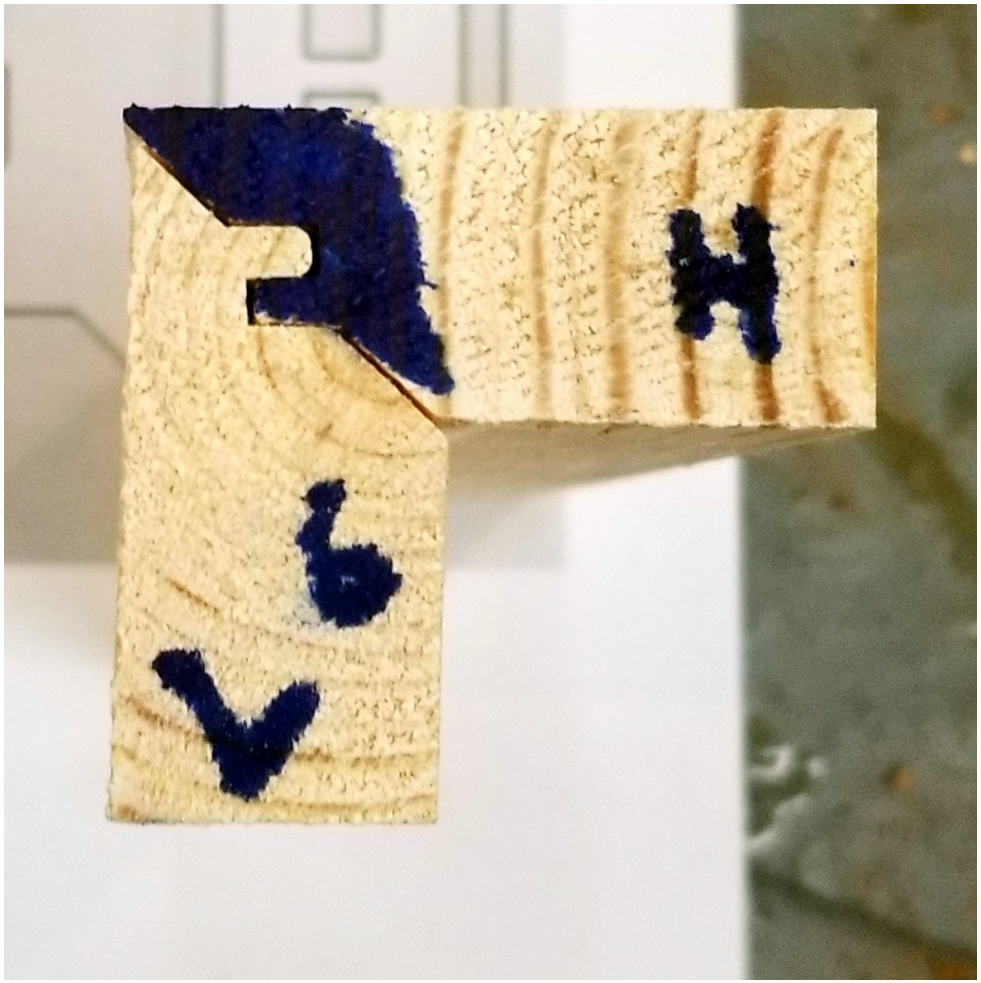
- Attempt #5



How to Make Boxes Using a Lock Miter Router Bit

- Hard to see in photo, but my troubleshooting guide says fence still too far away from bit by a small amount.

- Attempt #7



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- Success on Attempt #8 ☺

- I wish I had my troubleshooting guide when I started !

- Until I made the 4 cases, I really did not know what to adjust, fence or bit

How to Make Boxes Using a Lock Miter Router Bit

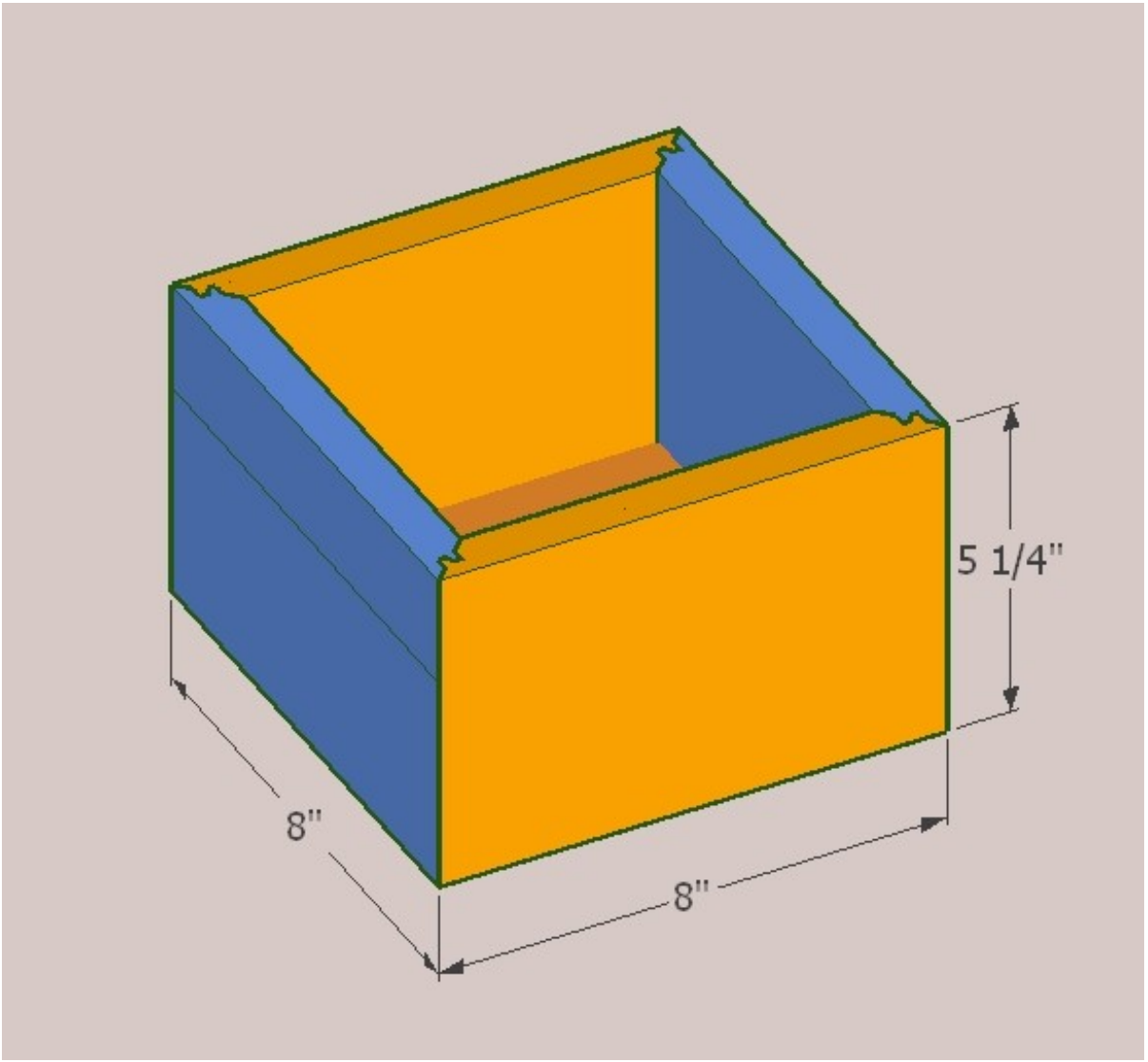
- I am guessing that even if you use the set-up block, you will still have a couple of trial & error tests to get it perfect

- And, troubleshooting photos would be helpful there also

How to Make Boxes Using a Lock Miter Router Bit

- I want to make a small box using this set-up
- Will hold this special bit and set-up blocks
- Will have floating Luan plywood panel for bottom
- Top will be glued on and will be a rail/stile type with a floating panel

How to Make Boxes Using a Lock Miter Router Bit



Ripped 1 by 12” board in half

11-1/4 wide, so make a little less than ½ width or 5-1/4”

How to Make Boxes Using a Lock Miter Router Bit

- Decided to use "guide stick" method to prevent tipping

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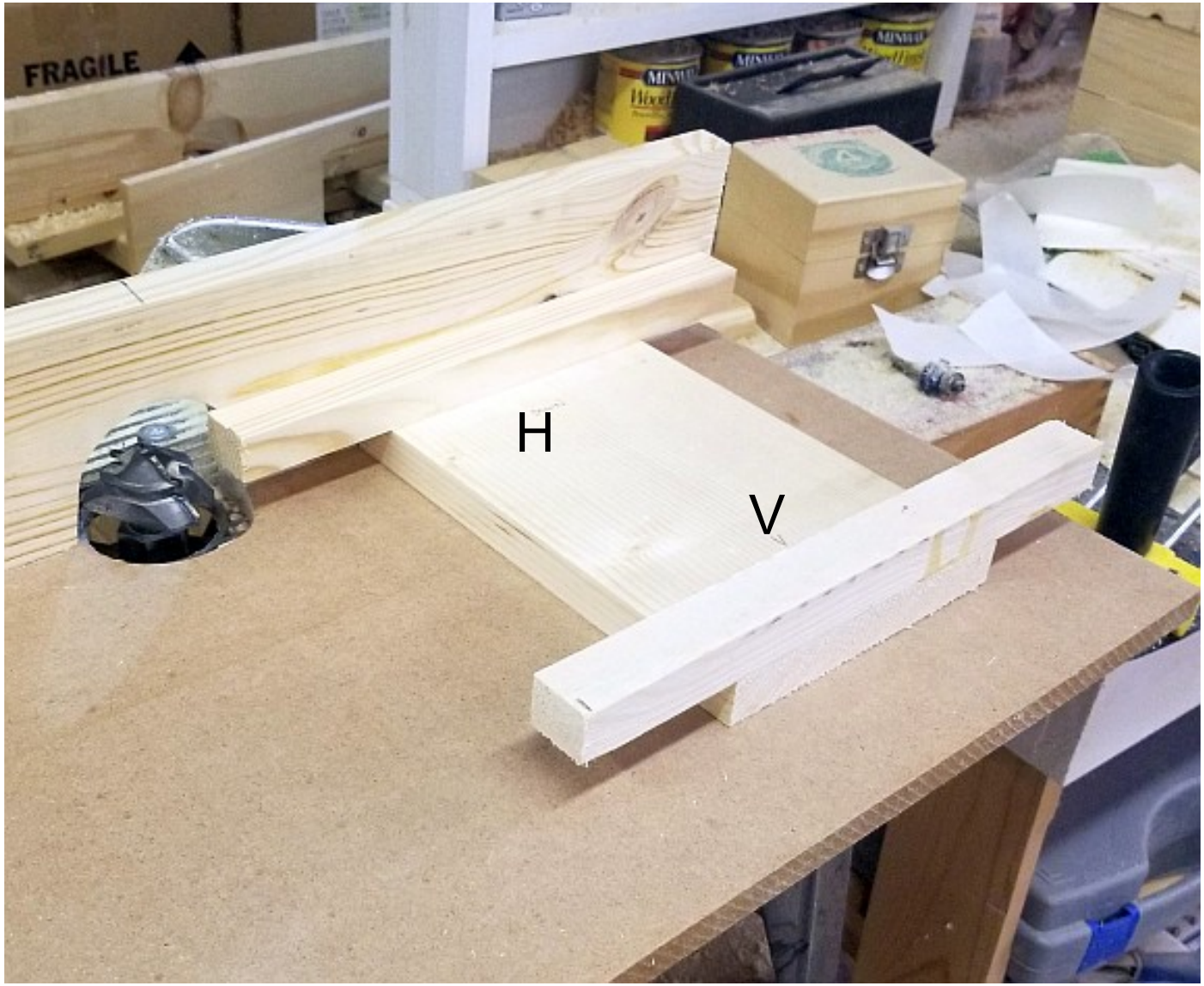

Guide sticks attached with 2-sided tape

How to Make Boxes Using a Lock Miter Router Bit

- 3 Passes

- Trying out the corner fit before removing guide sticks

How to Make Boxes Using a Lock Miter Router Bit

- Got some "tear-out" where bit exited the wood
- Will put on bottom of box
- Could use sacrificial piece to eliminate

How to Make Boxes Using a Lock Miter Router Bit

- Got nice corner joints

How to Make Boxes Using a Lock Miter Router Bit

- Set up table saw with 2 blades (1 outer + 1 skinny)
- Made groove ¼” wide and 3/8” deep
- Groove starts 3/8” up from bottom and runs around inside
- Sawed piece of Luan for the bottom (box ID + ¼ + ¼)
- Glue and clamp

How to Make Boxes Using a Lock Miter Router Bit

- Got nice corner joints

How to Make Boxes Using a Lock Miter Router Bit

- Use string and nail clamp method

- Joints at outer edges not perfect as before with no glue

How to Make Boxes Using a Lock Miter Router Bit

- Used1 Merlin band clamp
- Had to use many bar clamps
- Did not make all 4 outer edges perfect.
- Should have brushed on glue?

How to Make Boxes Using a Lock Miter Router Bit

- Made Shaker style raised panel for the lids with 1.5” wide rails and stiles

- Made lids ¼” oversize so so 1/8” on each side to remove with flush router trim bit

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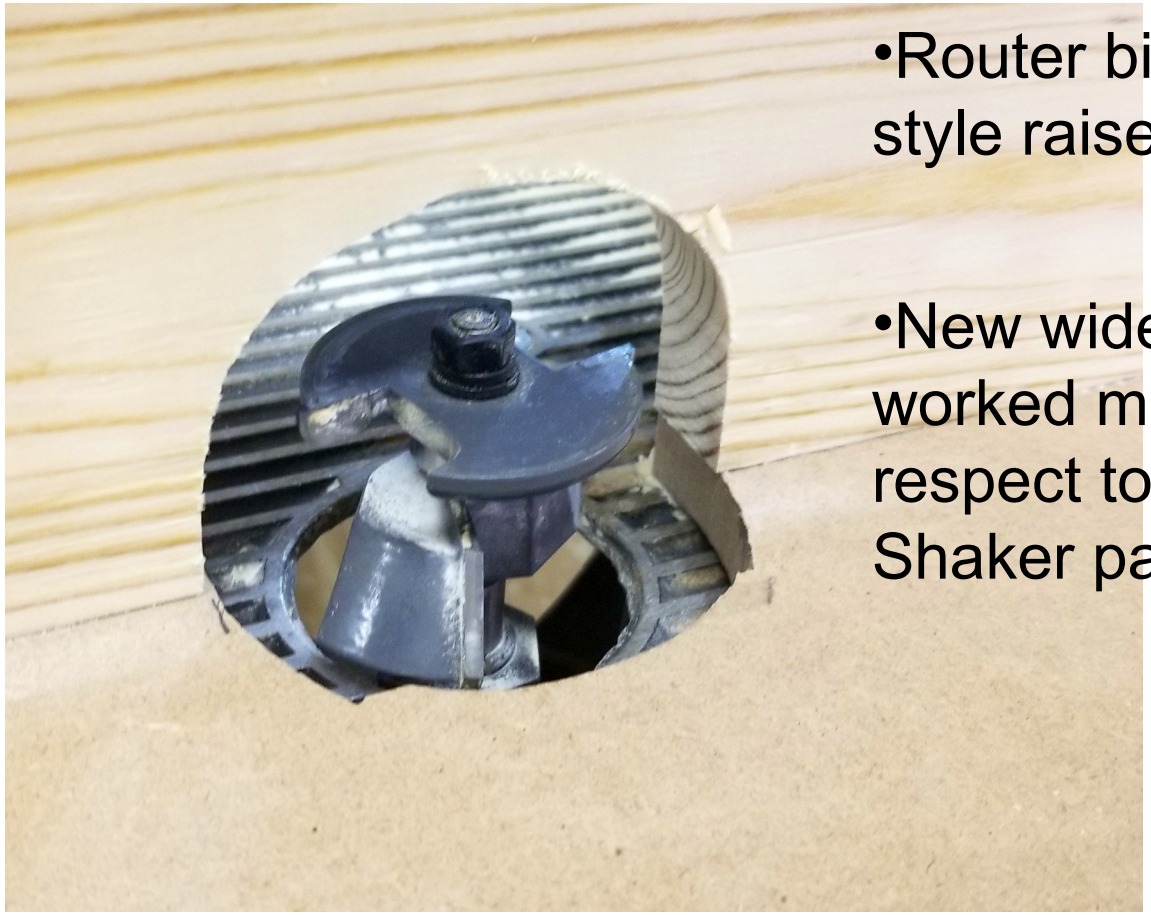

- Router bit to make Shaker style raised panel for the lids

- New wider spacer/fence worked much better with respect to tipping on previous Shaker panels I made

How to Make Boxes Using a Lock Miter Router Bit

- Put some blue masking tape on inside to catch any glue running

- Small wood clamp blocks to not dent pine with bar clamps.

How to Make Boxes Using a Lock Miter Router Bit

- New $60 flush router trim bit really worked nice

- Went slow, no tear-out at corners

How to Make Boxes Using a Lock Miter Router Bit

- Brush on
- Polyurethane #1
- Sand to 220 grit
- Poly #2

How to Make Boxes Using a Lock Miter Router Bit

- Brushed on oil stain
- Did not wipe off with rag
- Did final brush strokes in 1 direction

How to Make Boxes Using a Lock Miter Router Bit

- Saw 1 side
- Rotate box 90 deg
- Saw again
- Gives you perfect fit of lid to the box

How to Make Boxes Using a Lock Miter Router Bit

How to Make Boxes Using a Lock Miter Router Bit

Small Box

How to Make Boxes Using a Lock Miter Router Bit

Lessons Learned:

-Need troubleshooting photos to help get the set-up right…..Even with set-up block

-Should brush on glue at miter lock joints.
-Thick stream makes it tough to compress joint

-Once you get set-up right, fairly quick to make the miter lock joint

•**Summary:**

-This video explains how to build wood boxes using Lock Miter Joint.

-Hopefully this video helps you on your projects.

Hope You Enjoyed the Video !

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